

**SERVICE MANUAL**  
**CE-9W & CE-15W.**



**June 2004**

## 0 TABLE OF CONTENTS

0	TABLE OF CONTENTS	1
1	ELECTRICAL CONNECTION	2
2	ELECTRICAL COMPONENTS	3
2.1	UNBALANCE SWITCH (IR):	4
2.2	UNBALANCE RELAY (R2)	4
2.3	ROTATION DIRECTION SWITCH (IS)	5
2.4	ELECTRO-MAGNET COMPONENTS (E & IE):	6
2.5	DOOR SWITCH (IP)	7
2.6	DOOR OPENING BUTTON (IAP-L)	7
2.7	NTC DELAYER	8
2.8	MOTOR (M)	8
2.9	MOTOR CONNECTIONS BOX	8
2.10	FUSES	9
2.11	THERMAL SWITCH (TM)	9
2.12	TIMER (TP)	9
2.13	WIRING CONNECTIONS FOR THE MOTOR AND THE LID	10
3	TROUBLE SHOOTING	12
4	SCHEMATICS AND TECHNICAL EXPLANATION OF THE MACHINE	13

# 1 ELECTRICAL CONNECTION

These machines have been designed and manufactured to be connected at 208-230/60/3.

Important: Drum must spin clockwise, such is shown on pictures n° 1 and n° 2. If not, change 2 of the 3 phases on terminal block. If phases were not connected properly drum will spin counterclockwise and machine will not brake. However lid opening will be activated and accident could occur.



*Fig. n°1.*



*Fig. n°2.*

## 2 ELECTRICAL COMPONENTS

C1 are the main contactors to spin and brake the machine. Both contactors come installed with two auxiliary contacts (N113015), one normally closed, one normally open.

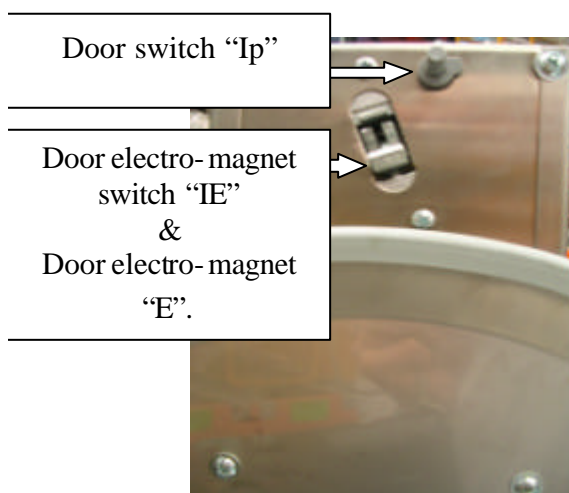
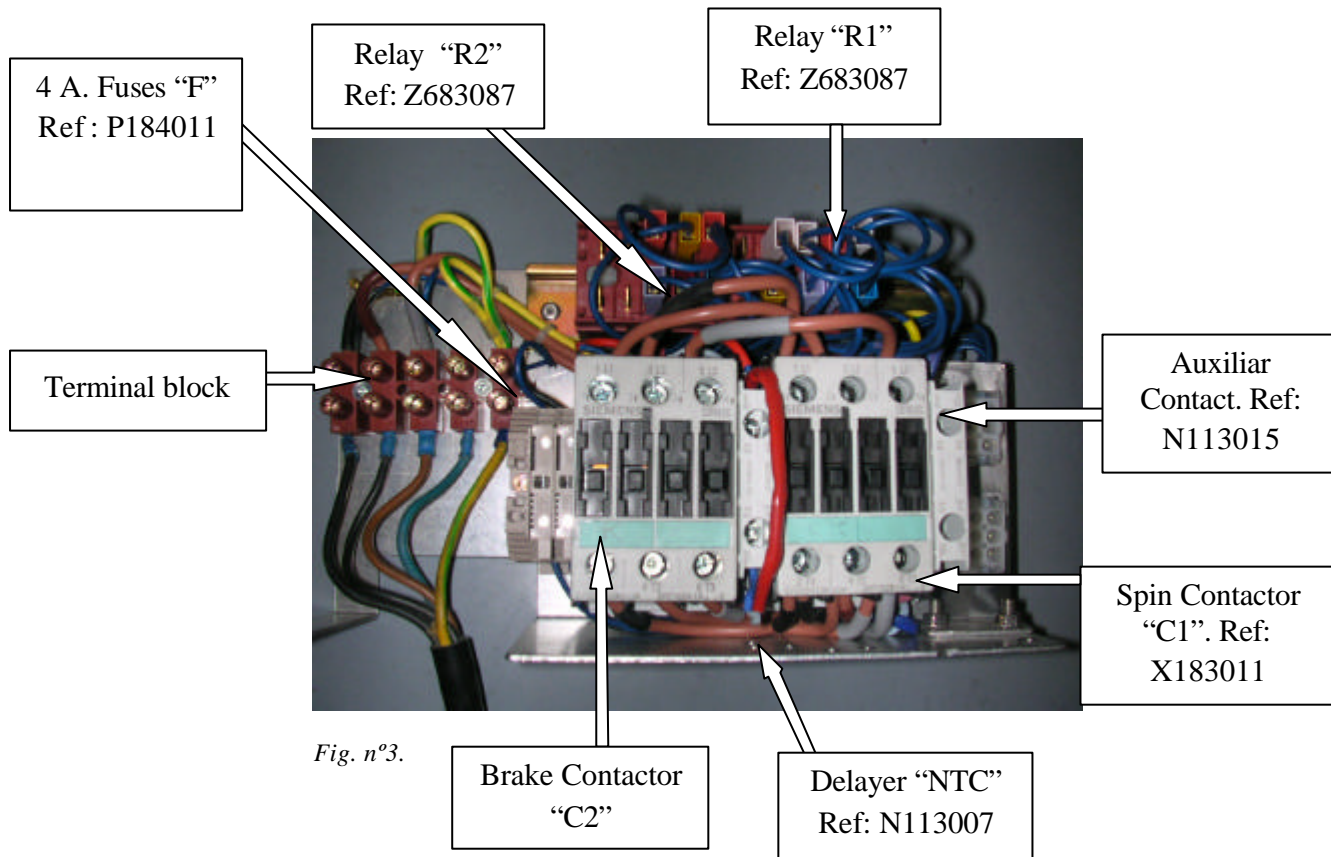


Fig. n°4.

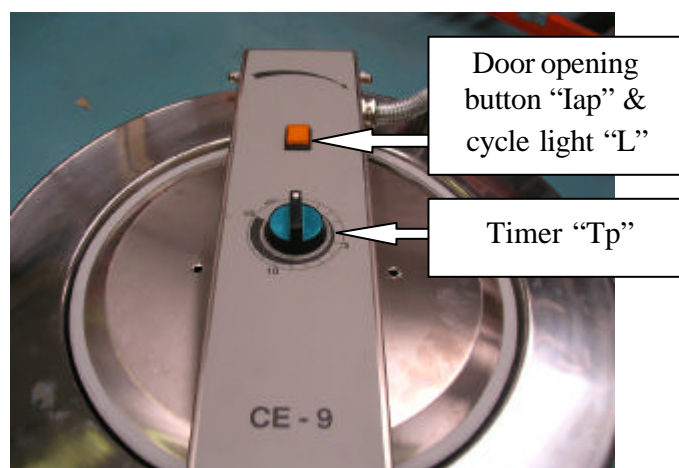


Fig. n°5.

## 2.1 UNBALANCE SWITCH (IR):

If the drum is moving out of control because of the weight of the clothes is not balanced or because of the shock absorbers are defective, the unbalance switch will stop the spin activating the R2 relay. Fig. n° 7

In order to continue the spin process, clothes must be balanced, the unbalance switch on position (Fig. n° 6) and the lid must have been open (Iap).

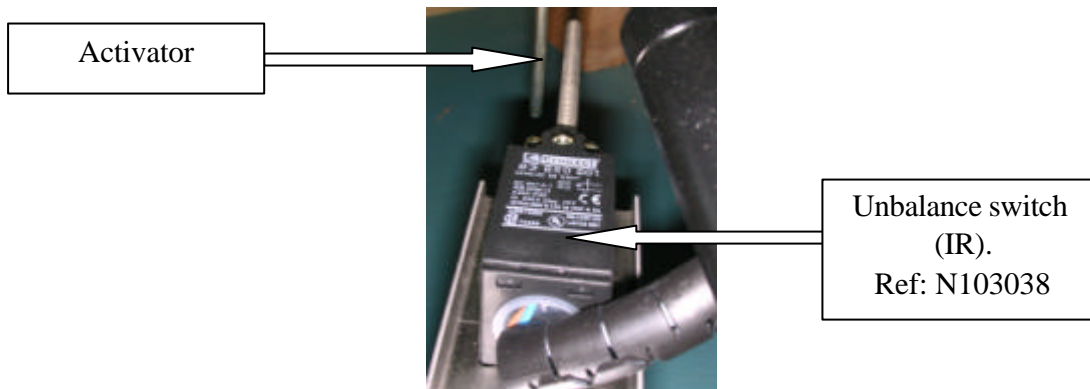


Fig. n°6.

## 2.2 UNBALANCE RELAY (R2)

R2 will be activated when IR is activated in order to stop the machine. R2 has a normally closed contact connected to C1 (spin contactor). That is why when R2 is activated C1 doesn't receive power and machine is stopped. Check schematic.

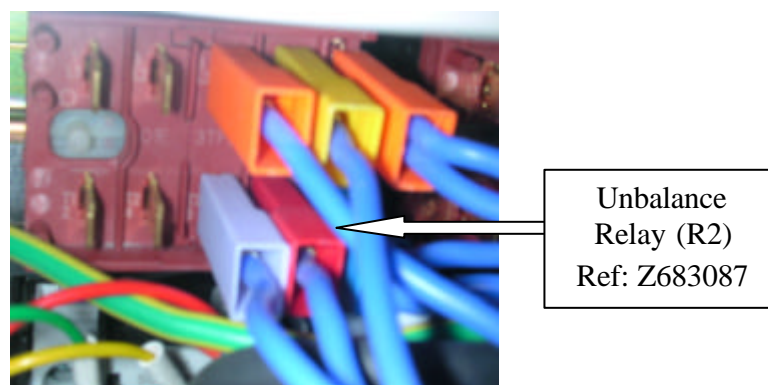


Fig. n°7.

## 2.3 ROTATION DIRECTION SWITCH (IS)

The rotation direction switch (Is) is inside of the motor connections box (Fig. 11) and it is activated by the clip on fig. 12.

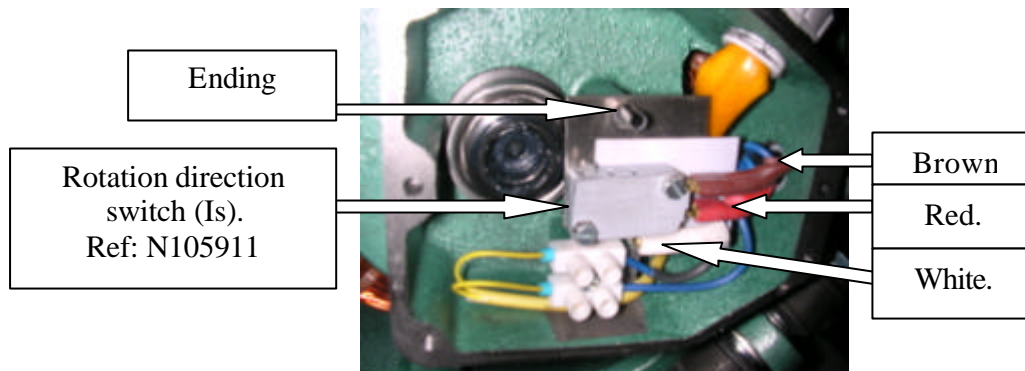


Fig. nº11.

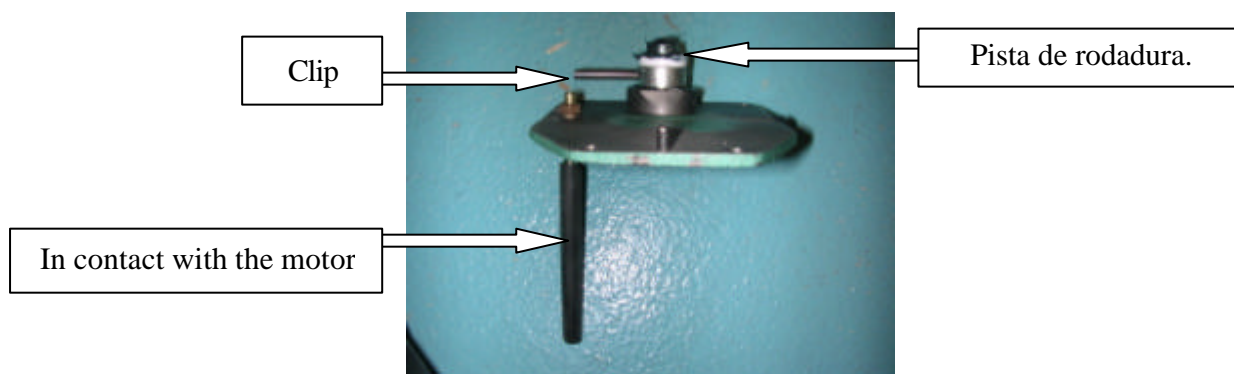


Fig. nº12.

The purpose of this switch is to activate the brake contactor C2 and once drum is not moving activate the opening of the lid.

## 2.4 ELECTRO-MAGNET COMPONENTS (E & IE):

It consists on an electro-magnet (E) and a switch (IE) fig. n°13. When (E) receives voltage the lid will open automatically. The connection on the solenoid of the electro-magnet is shown on picture n° 14.

The door switch IE is a normally open contact that will close when lid is closed. If the switch is open, machine can not operate, preventing so that hydoroextractor will work when lid is open.

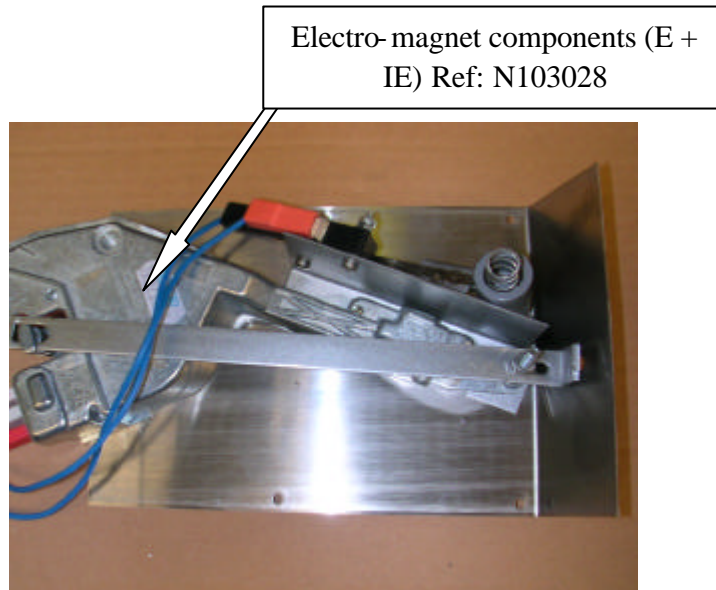


Fig. n°13 .

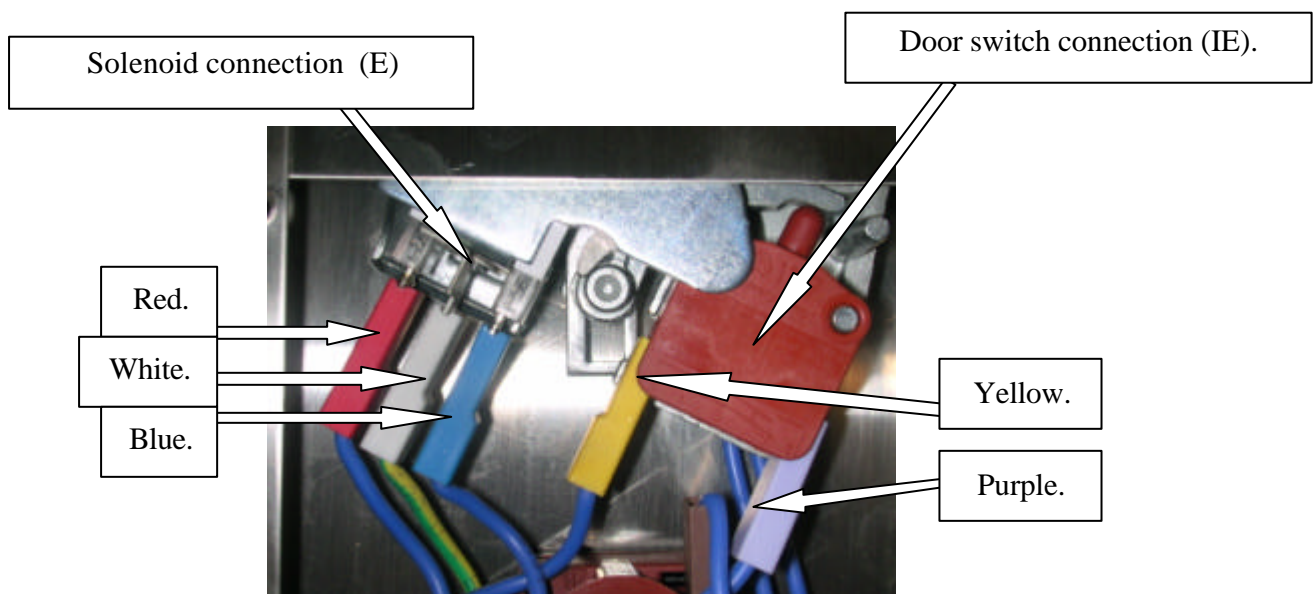
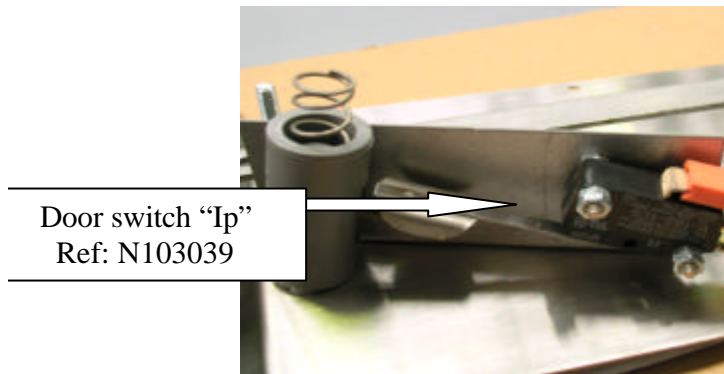


Fig. n°14.



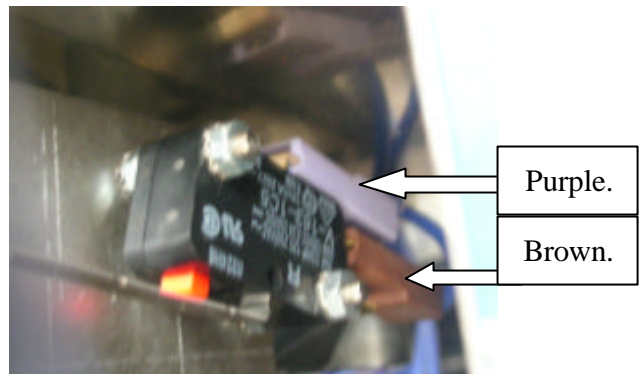
## 2.5 DOOR SWITCH (IP)

The door switch is a contact normally open that will close when lid is closed. This is to prevent that the drum is moving when lid is open. Fig. n° 16.



Door switch “Ip”  
Ref: N103039

Fig. n°15



Purple.

Brown.

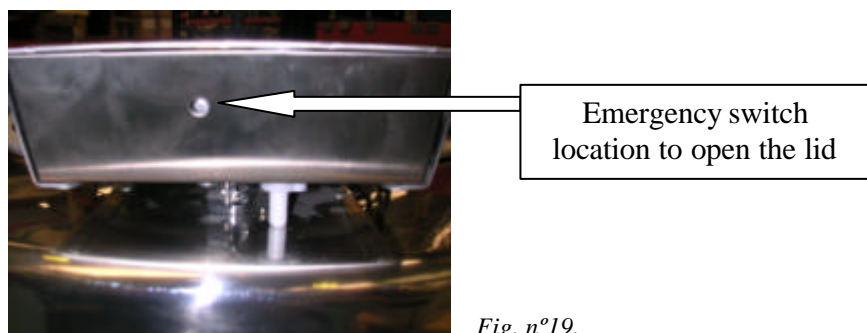
Fig n°16.

## 2.6 DOOR OPENING BUTTON (IAP-L)

Iap will open the lid only when the drum is not moving, so before activating the timer. If you need to open the lid and the machine is already spinning, turn the timer until “O” position. In this way the machine will brake and lid will open. The button has pilot light (L) that will be on during the spin cycle. Ref.: Z213033



In case of failure or lack of power, the lid can be open manually pushing over the emergency lid opening switch located on the front side of the lid holder. Fig. n° 19.



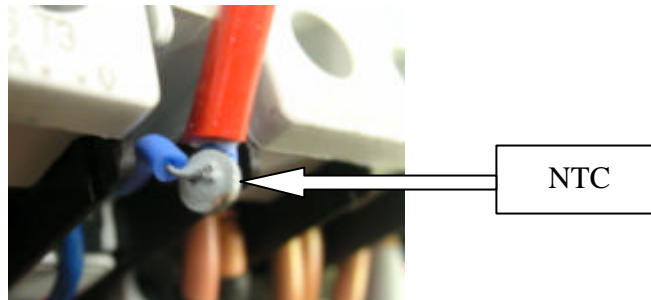
Emergency switch  
location to open the lid

Fig. n°19.



## 2.7 NTC DELAYER

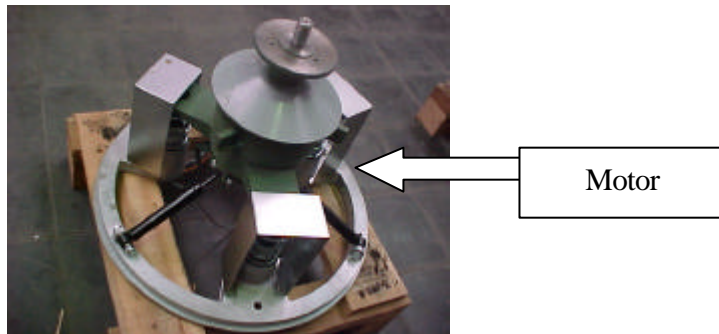
NTC works like a timer before activating the brake contactor C2. Voltage doesn't go through until NTC is heated up. When the spin time is over, C1 is disconnected but C2 will take a while to be activated thanks to the NTC. This action will prevent short-circuits in case both contactor worked at the same time.



## 2.8 MOTOR (M)

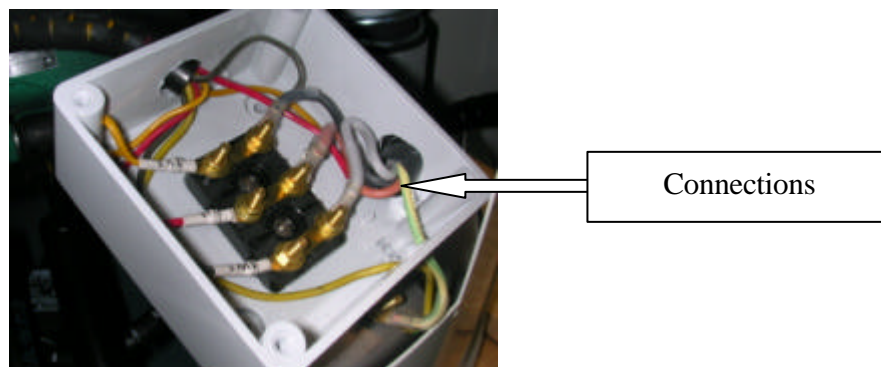
CE-9W; Ref.: N107701
240V – 415V 60Hz. ½ HP

CE-15W; Ref.: N117701
240V – 415V 60Hz. 1 HP



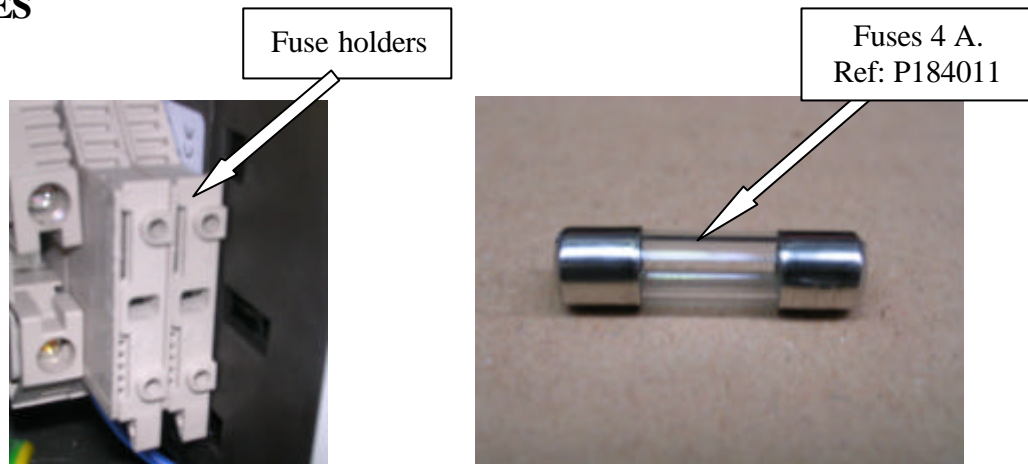
## 2.9 MOTOR CONNECTIONS BOX

On picture n° 21 is shown the box of a CE-15W where the motor connections are done. For the model CE-9W the box is eliminated and connection (triangle or star) is done on the same contactor.



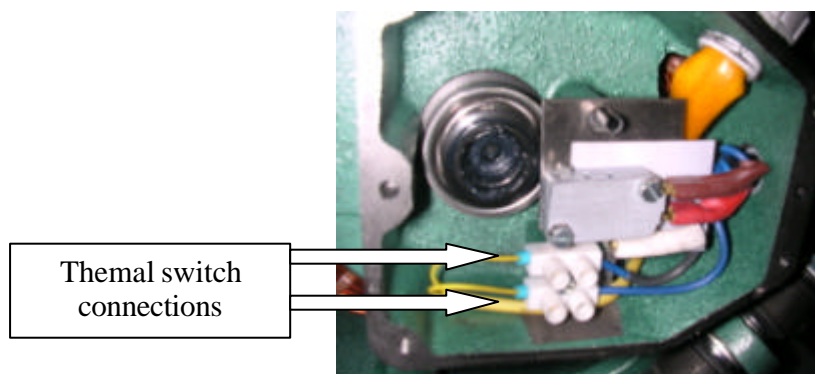
*Fig. n°21*

## 2.10 FUSES



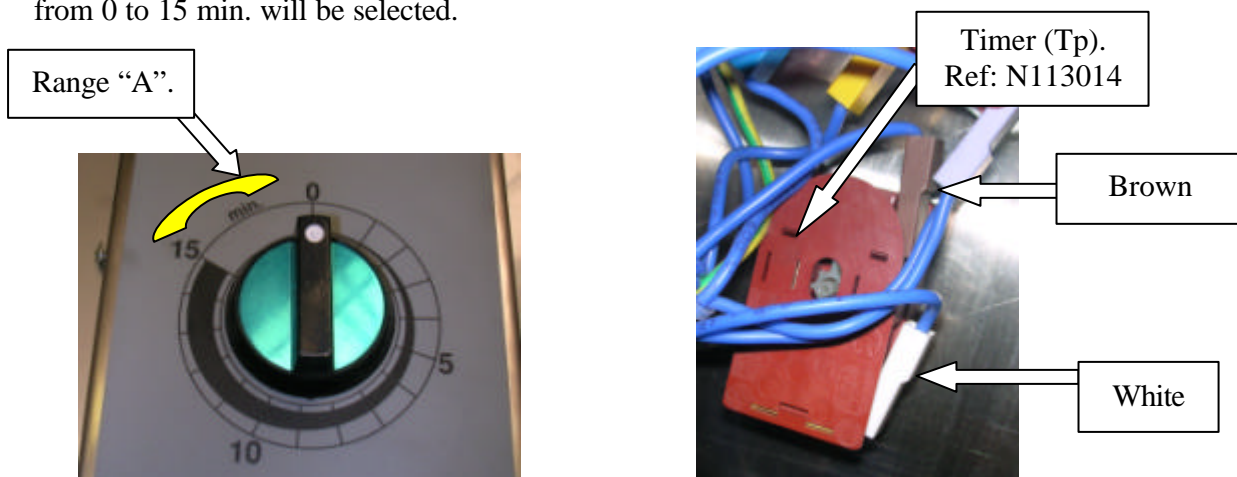
## 2.11 THERMAL SWITCH (TM)

Tm is an internal contact inside the motor normally closed that will open when the motor has overheated. When motor has cooled down contact will close automatically.



## 2.12 TIMER (TP)

If timer is placed on the “A” area. the hydrextractor will be working continuously. If not time from 0 to 15 min. will be selected.



## 2.13 WIRING CONNECTIONS FOR THE MOTOR AND THE LID

There are two terminal connectors for the motor and the lid connections. Working on these connectors it is possible to check out components and it is not necessary to work on the component by itself. See fig. n° 28.

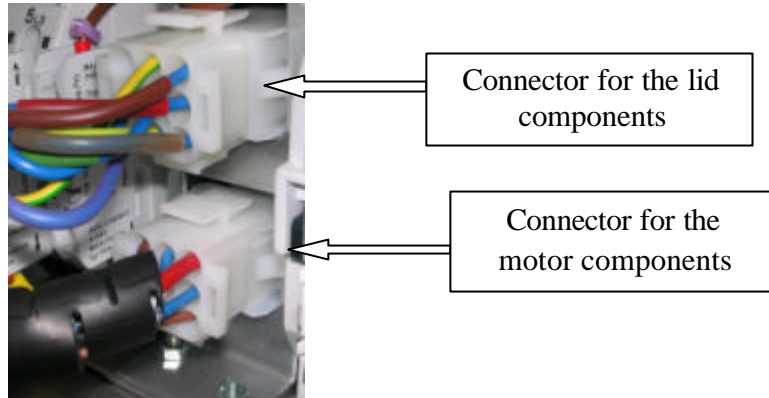


Fig. n°28.

### A) Connector for the motor components

On this terminal connector are connected the thermal switch of the motor (TM), the rotation direction switch (IS) and the unbalance switch (IR). On picture n° 29 it is shown the male connector and color of the wire on the electrical schematic.

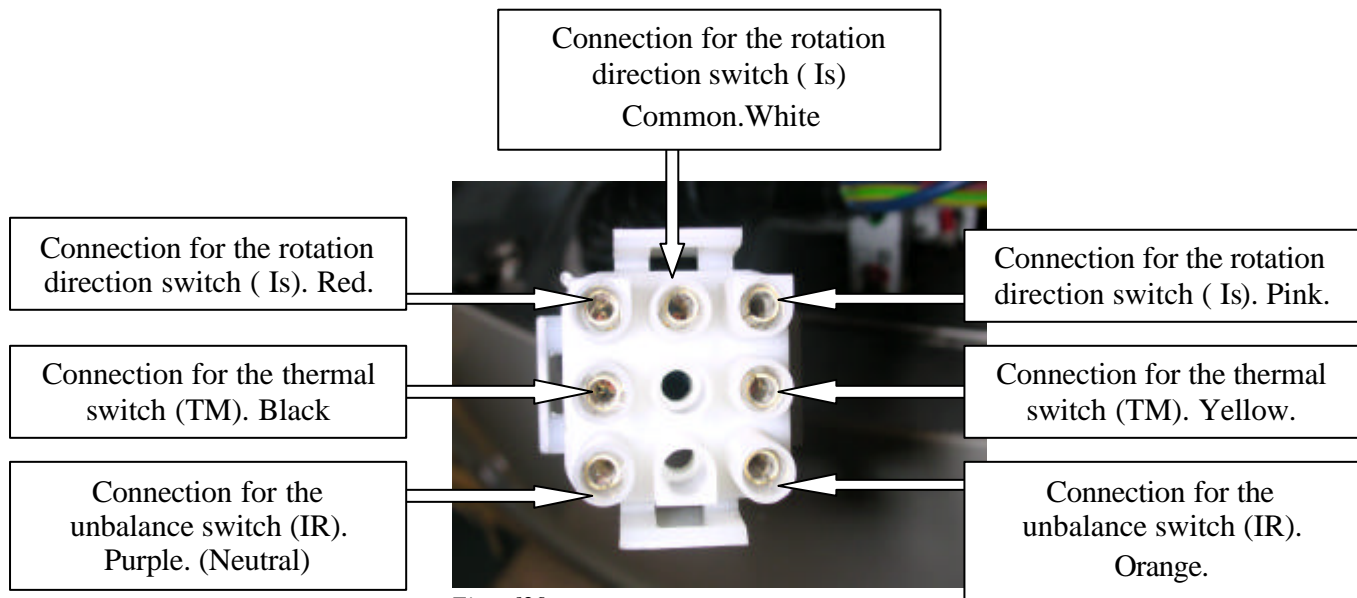
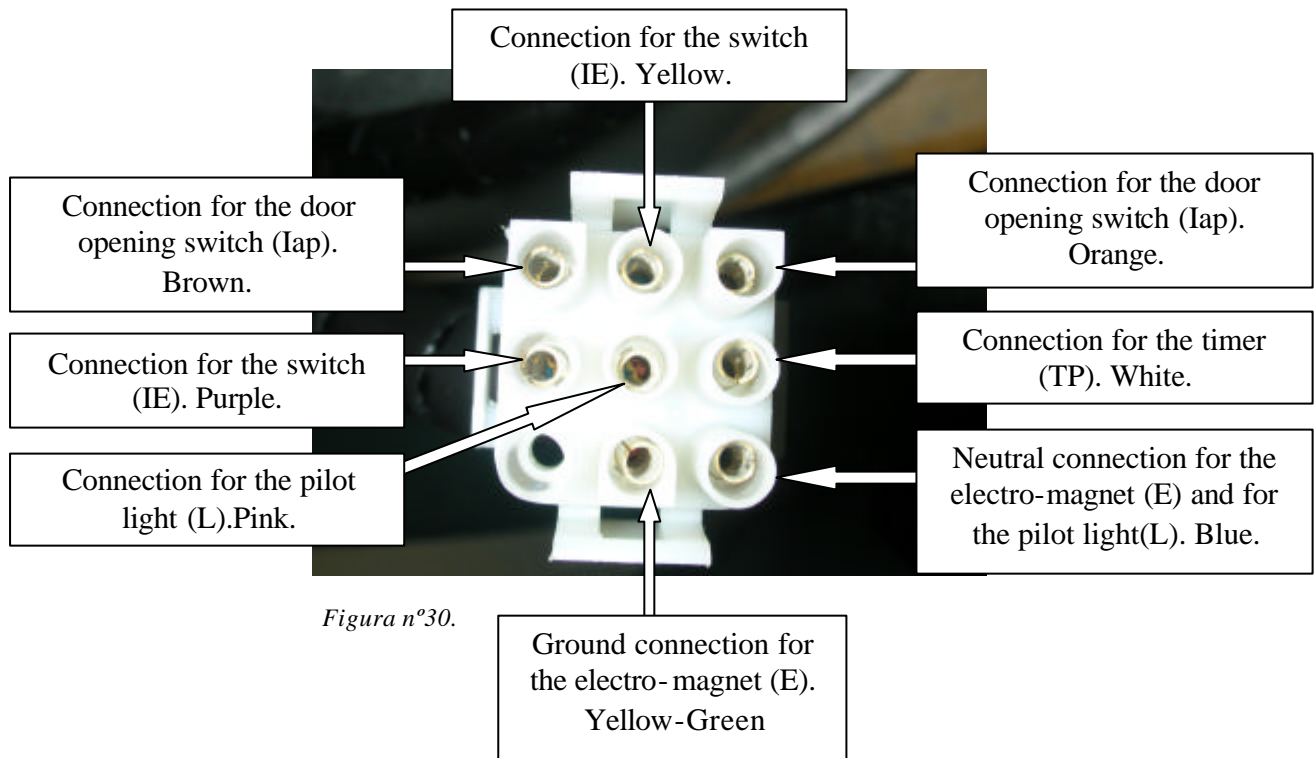


Fig. n°29.

### **B) Connector for the lid components**

On this terminal connector are connected the electro-magnet (E) and the switch (IE), the door opening switch (Iap) and the timer (Tp). See the male connector and wiring colors on picture n° 30



### 3 TROUBLE SHOOTING

NOTE: Before carrying out any operation (checking or repair) the machine must always be disconnected from the mains

PROBLEM	POSSIBLE CAUSE	WAY TO CORRECT IT
The motor does not start. The indicator lamp does not light up	No power Lid is not closed Timer doesn't work Terminal fuse of the motor has stopped the machine Contactor C1 is broken	Check out fuses Close lid or replace close switch if it is broken Replace Motor is too hot. Fuse will be activated automatically once motor has cool down Replace
The motor disconnects immediately after starting.	Not equilibrated switch has been activated Shock absorbers are defective	Deliver the clothes (weight) better inside the drum Replace
The brake does not work	It is probable that two phases were not connected properly and spin is not going in the right direction Contactor C2 or delayer NTC defective	Check out drum goes clockwise. If not change phases. Replace
Motor continues working when time is over	Timer defective	Replace
Lid doesn't open	Rotation direction switch defective IS Door electro magnet defective E	Replace Replace

## **4 SCHEMATICS AND TECHNICAL EXPLANATION OF THE MACHINE**

Review the information below looking at the schematic on next page.

If lid is closed (IP closed) and timer is activated (TP closed) power will go through contact C2 and contact R2 (normally closed), activating C1 contactor. C1 contacts will be closed and motor M will start spinning clockwise.

Light will come on and Relay R1 will be activated.

If the clothes are not balanced IR will activate Relay R2 and R2 normally closed contact will be open so C1 will be deactivated and machine will stop.

When time is over C1 is deactivated and power will go through C1 normally closed contact, through IS but it will not activate C2 immediately because NTC delays it.

When C2 is activated the direction of the spin is counterclockwise, so that will brake the drum but will not spin, because IS will detect the change of the direction on the rotation and contact will change position.

When IS contact has changed position, door-magnet E is activated opening the lid (IE).

When drum is not moving and time was not selected, if we press the door opening button Iap E will be activated and lid will open.



# CE - 9 CE - 15

